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United States Patent and Trademark  
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Biotechnology Systems Branch

## FAX TRANSMISSION COVER SHEET

DATE: 04/26/2006Total Number of Pages Faxed: 8

TO:

NAME:

Thomson James

ORG.:

FAX NUMBER:

571-273-0459

FROM: Mark Spencer

Voice Ph. Number: (571)272-2510

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Message:

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## RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/516,075  
Source: PCJ  
Date Processed by STIC: 04/26/2006

# *ENTERED*



PCT

## RAW SEQUENCE LISTING

DATE: 04/26/2006

PATENT APPLICATION: US/10/516,075

TIME: 09:48:11

Input Set : E:\Final Sequence list-3173-00012-US.txt

Output Set: N:\CRF4\04262006\J516075.raw

3 <110> APPLICANT: Sonnewald, Uwe  
4 Bornke, Frederik  
5 Herbers, Karin  
6 Tschiersch, Bettina  
7 Neuhaus, Horst-Ekkehard  
9 <120> TITLE OF INVENTION: Methods for obtaining pathogen resistance in plants  
11 <130> FILE REFERENCE: 13173-00012-US  
13 <140> CURRENT APPLICATION NUMBER: US 10/516,075  
14 <141> CURRENT FILING DATE: 2004-11-29  
16 <150> PRIOR APPLICATION NUMBER: PCT/EP2003/007027  
17 <151> PRIOR FILING DATE: 2003-07-02  
19 <150> PRIOR APPLICATION NUMBER: DE 102 30 220.0  
20 <151> PRIOR FILING DATE: 2002-07-04  
22 <160> NUMBER OF SEQ ID NOS: 36  
24 <170> SOFTWARE: PatentIn version 3.3  
27 <210> SEQ ID NO: 1  
28 <211> LENGTH: 1890  
29 <212> TYPE: DNA  
30 <213> ORGANISM: Protaminobacter rubrum  
32 <220> FEATURE:  
33 <221> NAME/KEY: CDS  
34 <222> LOCATION: (1)..(1887)  
35 <223> OTHER INFORMATION: coding for sucrose isomerase  
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39 Met Pro Arg Gln Gly Leu Lys Thr Ala Leu Ala Ile Phe Leu Thr Thr  
40 1 5 10 15  
41 tca tta tgc atc tca tgc cag caa gcc ttc ggt acg caa caa ccc ttg 96  
42 Ser Leu Cys Ile Ser Cys Gln Gln Ala Phe Gly Thr Gln Gln Pro Leu  
43 20 25 30  
44 ctt aac gaa aag agt atc gaa cag tgc aaa acc ata cct aaa tgg tgg 144  
45 Leu Asn Glu Lys Ser Ile Glu Gln Ser Lys Thr Ile Pro Lys Trp Trp  
46 35 40 45  
47 aag gag gct gtt ttt tat cag gtg tat ccg cgc tcc ttt aaa gac acc 192  
48 Lys Glu Ala Val Phe Tyr Gln Val Tyr Pro Arg Ser Phe Lys Asp Thr  
49 50 55 60  
50 aac gga gat ggc atc ggg gat att aac ggc atc ata gaa aaa tta gac 240  
51 Asn Gly Asp Gly Ile Gly Asp Ile Asn Gly Ile Ile Glu Lys Leu Asp  
52 65 70 75 80  
53 tat cta aaa gcc ttg ggg att gat gcc att tgg atc aac cca cat tat 288  
54 Tyr Leu Lys Ala Leu Gly Ile Asp Ala Ile Trp Ile Asn Pro His Tyr  
55 85 90 95  
56 gat tct ccg aac acg gat aat ggt tac gat ata cgt gat tat cga aaa 336

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Input Set : E:\Final Sequence list-13173-00012-US.txt

Output Set: N:\CRF4\04262006\J516075.raw

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58                               100                               105                               110
59 atc atg aaa gaa tat ggc acg atg gag gat ttt gac cgc ctg att tct 384
60 Ile Met Lys Glu Tyr Gly Thr Met Glu Asp Phe Asp Arg Leu Ile Ser
61                               115                               120                               125
62 gaa atg aaa aaa cgg aat atg cgg ttg atg att gat gtg gtc atc aac 432
63 Glu Met Lys Lys Arg Asn Met Phe Leu Met Ile Asp Val Val Ile Asn
64                               130                               135                               140
65 cac acc agc gat caa aac gaa tgg ttt gtt aaa agt aaa agc agt aag 480
66 His Thr Ser Asp Gln Asn Glu Trp Phe Val Lys Ser Lys Ser Ser Lys
67 145                               150                               155                               160
68 gat aat cct tat cgc ggc tat tat ttc tgg aaa gat gct aaa gaa ggg 528
69 Asp Asn Pro Tyr Arg Gly Tyr Tyr Phe Trp Lys Asp Ala Lys Glu Gly
70                               165                               170                               175
71 cag gcg cct aat aat tac cct tca ttc ttt ggt ggc tcg gcg tgg caa 576
72 Gln Ala Pro Asn Asn Tyr Pro Ser Phe Phe Gly Gly Ser Ala Trp Gln
73                               180                               185                               190
74 aaa gat gaa aag acc aat caa tac tac ctg cac tat ttt gct aaa caa 624
75 Lys Asp Glu Lys Thr Asn Gln Tyr Tyr Leu His Tyr Phe Ala Lys Gln
76                               195                               200                               205
77 cag cct gac cta aac tgg gat aat ccc aaa gtc cgt caa gat ctt tat 672
78 Gln Pro Asp Leu Asn Trp Asp Asn Pro Lys Val Arg Gln Asp Leu Tyr
79                               210                               215                               220
80 gca atg tta cgt ttc tgg tta gat aaa ggc gtg tct ggt tta cgt ttt 720
81 Ala Met Leu Arg Phe Trp Leu Asp Lys Gly Val Ser Gly Leu Arg Phe
82 225                               230                               235                               240
83 gat acg gta gcg acc tac tca aaa att ccg gat ttc cca aat ctc acc 768
84 Asp Thr Val Ala Thr Tyr Ser Lys Ile Pro Asp Phe Pro Asn Leu Thr
85                               245                               250                               255
86 caa caa cag ctg aag aat ttt gca gcg gag tat acc aag ggc cct aat 816
87 Gln Gln Gln Leu Lys Asn Phe Ala Ala Glu Tyr Thr Lys Gly Pro Asn
88                               260                               265                               270
89 att cat cgt tac gtc aat gaa atg aat aaa gag gtc ttg tct cat tac 864
90 Ile His Arg Tyr Val Asn Glu Met Asn Lys Glu Val Leu Ser His Tyr
91                               275                               280                               285
92 gac att gcg act gcc ggt gaa atc ttt ggc gta ccc ttg gat caa tcg 912
93 Asp Ile Ala Thr Ala Gly Glu Ile Phe Gly Val Pro Leu Asp Gln Ser
94                               290                               295                               300
95 ata aag ttc ttc gat cgc cgc cgt gat gag ctg aac att gca ttt acc 960
96 Ile Lys Phe Phe Asp Arg Arg Arg Asp Glu Leu Asn Ile Ala Phe Thr
97 305                               310                               315                               320
98 ttt gac tta atc aga ctc gat cga gac tct gat caa aga tgg cgt cga 1008
99 Phe Asp Leu Ile Arg Leu Asp Arg Asp Ser Asp Gln Arg Trp Arg Arg
100                               325                               330                               335
101 aaa gat tgg aaa ttg tgg caa ttc cgg cag atc atc gat aac gtt gac 1056
102 Lys Asp Trp Lys Leu Ser Gln Phe Arg Gln Ile Ile Asp Asn Val Asp
103                               340                               345                               350
104 cgt act gca gga gaa tat ggt tgg aat gcc ttc ttc ttg gat aac cac 1104
105 Arg Thr Ala Gly Glu Tyr Gly Trp Asn Ala Phe Phe Leu Asp Asn His
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Input Set : E:\Final Sequence list-13173-00012-US.txt  
Output Set: N:\CRF4\04262006\J516075.raw

106	355	360	365	
107 gac aat ccg cgc gct gtc tcg	cac ttt ggc gat gat gat cgc cca caa	1152		
108 Asp Asn Pro Arg Ala Val Ser	His Phe Gly Asp Asp Asp Arg Pro Gln			
109 370	375	380		
110 tgg cgt gag cca tcg gct aaa	gcg ctt gca acc ttg acg ctg act caa	1200		
111 Trp Arg Glu Pro Ser Ala Lys	Ala Leu Ala Thr Leu Thr Leu Thr Gln			
112 385	390	395	400	
113 cga gca aca cct ttt att tat	caa ggt tca gaa ttg ggc atg acc aat	1248		
114 Arg Ala Thr Pro Phe Ile Tyr	Gln Gly Ser Glu Leu Gly Met Thr Asn			
115 405	410	415		
116 tac ccg ttt aaa gct att gat	gaa ttc gat gat att gag gtg aaa ggt	1296		
117 Tyr Pro Phe Lys Ala Ile Asp	Glu Phe Asp Asp Ile Glu Val Lys Gly			
118 420	425	430		
119 ttt tgg cat gac tac gtt gag	aca gga aag gtc aaa gcc gac gag ttc	1344		
120 Phe Trp His Asp Tyr Val Glu	Thr Gly Lys Val Lys Ala Asp Glu Phe			
121 435	440	445		
122 ttg caa aat gta cgc ctg acg	agc agg gat aac agc cgg acg ccg ttc	1392		
123 Leu Gln Asn Val Arg Leu Thr	Ser Arg Asp Asn Ser Arg Thr Pro Phe			
124 450	455	460		
125 caa tgg gac ggg agc aaa aac	gca gga ttc acg agc gga aaa cct tgg	1440		
126 Gln Trp Asp Gly Ser Lys Asn	Ala Gly Phe Thr Ser Gly Lys Pro Trp			
127 465	470	475	480	
128 ttc aag gtc aac cca aac tac	cag gaa atc aat gca gta agt caa gtc	1488		
129 Phe Lys Val Asn Pro Asn Tyr	Gln Glu Ile Asn Ala Val Ser Gln Val			
130 485	490	495		
131 aca caa ccc gac tca gta ttt	aac tat tat cgt cag ttg atc aag ata	1536		
132 Thr Gln Pro Asp Ser Val Phe	Asn Tyr Tyr Arg Gln Leu Ile Lys Ile			
133 500	505	510		
134 agg cat gac atc ccg gca ctg	acc tat ggt aca tac acc gat ttg gat	1584		
135 Arg His Asp Ile Pro Ala Leu	Thr Tyr Gly Thr Tyr Thr Asp Leu Asp			
136 515	520	525		
137 cct gca aat gat tcg gtc tac	gcc tat aca cgc agc ctt ggg gcg gaa	1632		
138 Pro Ala Asn Asp Ser Val Tyr	Ala Tyr Thr Arg Ser Leu Gly Ala Glu			
139 530	535	540		
140 aaa tat ctt gtt gtt gtt aac	ttc aag gag caa atg atg aga tat aaa	1680		
141 Lys Tyr Leu Val Val Val Asn	Phe Lys Glu Gln Met Met Arg Tyr Lys			
142 545	550	555	560	
143 tta ccg gat aat tta tcc att	gag aaa gtg att ata gac agc aac agc	1728		
144 Leu Pro Asp Asn Leu Ser Ile	Glu Lys Val Ile Ile Asp Ser Asn Ser			
145 565	570	575		
146 aaa aac gtg gtg aaa aag aat	gat tca tta ctc gag cta aaa cca tgg	1776		
147 Lys Asn Val Val Lys Lys Asn	Asp Ser Leu Leu Glu Leu Lys Pro Trp			
148 580	585	590		
149 cag tca ggg gtt tat aaa act	aaa tca ata aat ctc ata gtc acg cca	1824		
150 Gln Ser Gly Val Tyr Lys Thr	Lys Ser Ile Asn Leu Ile Val Thr Pro			
151 595	600	605		
152 aat aat gta aat ata ttg aaa	cta tta aaa ccg gca ttt tat gcc ggt	1872		
153 Asn Asn Val Asn Ile Leu Lys	Leu Leu Lys Pro Ala Phe Tyr Ala Gly			
154 610	615	620		

## RAW SEQUENCE LISTING

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Input Set : E:\Final Sequence list-13173-00012-US.txt

Output Set: N:\CRF4\04262006\J516075.raw

155 ttt ttt agc gca aaa tag  
156 Phe Phe Ser Ala Lys  
157 625  
160 <210> SEQ ID NO: 2  
161 <211> LENGTH: 629  
162 <212> TYPE: PRT  
163 <213> ORGANISM: Protaminobacter rubrum  
165 <400> SEQUENCE: 2  
166 Met Pro Arg Gln Gly Leu Lys Thr Ala Leu Ala Ile Phe Leu Thr Thr  
167 1 5 10 15  
168 Ser Leu Cys Ile Ser Cys Gln Gln Ala Phe Gly Thr Gln Gln Pro Leu  
169 20 25 30  
170 Leu Asn Glu Lys Ser Ile Glu Gln Ser Lys Thr Ile Pro Lys Trp Trp  
171 35 40 45  
172 Lys Glu Ala Val Phe Tyr Gln Val Tyr Pro Arg Ser Phe Lys Asp Thr  
173 50 55 60  
174 Asn Gly Asp Gly Ile Gly Asp Ile Asn Gly Ile Ile Glu Lys Leu Asp  
175 65 70 75 80  
176 Tyr Leu Lys Ala Leu Gly Ile Asp Ala Ile Trp Ile Asn Pro His Tyr  
177 85 90 95  
178 Asp Ser Pro Asn Thr Asp Asn Gly Tyr Asp Ile Arg Asp Tyr Arg Lys  
179 100 105 110  
180 Ile Met Lys Glu Tyr Gly Thr Met Glu Asp Phe Asp Arg Leu Ile Ser  
181 115 120 125  
182 Glu Met Lys Lys Arg Asn Met Arg Leu Met Ile Asp Val Val Ile Asn  
183 130 135 140  
184 His Thr Ser Asp Gln Asn Glu Trp Phe Val Lys Ser Lys Ser Ser Lys  
185 145 150 155 160  
186 Asp Asn Pro Tyr Arg Gly Tyr Tyr Phe Trp Lys Asp Ala Lys Glu Gly  
187 165 170 175  
188 Gln Ala Pro Asn Asn Tyr Pro Ser Phe Phe Gly Gly Ser Ala Trp Gln  
189 180 185 190  
190 Lys Asp Glu Lys Thr Asn Gln Tyr Tyr Leu His Tyr Phe Ala Lys Gln  
191 195 200 205  
192 Gln Pro Asp Leu Asn Trp Asp Asn Pro Lys Val Arg Gln Asp Leu Tyr  
193 210 215 220  
194 Ala Met Leu Arg Phe Trp Leu Asp Lys Gly Val Ser Gly Leu Arg Phe  
195 225 230 235 240  
196 Asp Thr Val Ala Thr Tyr Ser Lys Ile Pro Asp Phe Pro Asn Leu Thr  
197 245 250 255  
198 Gln Gln Gln Leu Lys Asn Phe Ala Ala Glu Tyr Thr Lys Gly Pro Asn  
199 260 265 270  
200 Ile His Arg Tyr Val Asn Glu Met Asn Lys Glu Val Leu Ser His Tyr  
201 275 280 285  
202 Asp Ile Ala Thr Ala Gly Glu Ile Phe Gly Val Pro Leu Asp Gln Ser  
203 290 295 300  
204 Ile Lys Phe Phe Asp Arg Arg Asp Glu Leu Asn Ile Ala Phe Thr  
205 305 310 315 320  
206 Phe Asp Leu Ile Arg Leu Asp Arg Asp Ser Asp Gln Arg Trp Arg Arg

1890

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/516,075

DATE: 04/26/2006

TIME: 09:48:11

Input Set : E:\Final Sequence list-13173-00012-US.txt

Output Set: N:\CRF4\04262006\J516075.raw

207 325 330 335  
208 Lys Asp Trp Lys Leu Ser Gln Phe Arg Gln Ile Ile Asp Asn Val Asp  
209 340 345 350  
210 Arg Thr Ala Gly Glu Tyr Gly Trp Asn Ala Phe Phe Leu Asp Asn His  
211 355 360 365  
212 Asp Asn Pro Arg Ala Val Ser His Phe Gly Asp Asp Asp Arg Pro Gln  
213 370 375 380  
214 Trp Arg Glu Pro Ser Ala Lys Ala Leu Ala Thr Leu Thr Leu Thr Gln  
215 385 390 395 400  
216 Arg Ala Thr Pro Phe Ile Tyr Gln Gly Ser Glu Leu Gly Met Thr Asn  
217 405 410 415  
218 Tyr Pro Phe Lys Ala Ile Asp Glu Phe Asp Asp Ile Glu Val Lys Gly  
219 420 425 430  
220 Phe Trp His Asp Tyr Val Glu Thr Gly Lys Val Lys Ala Asp Glu Phe  
221 435 440 445  
222 Leu Gln Asn Val Arg Leu Thr Ser Arg Asp Asn Ser Arg Thr Pro Phe  
223 450 455 460  
224 Gln Trp Asp Gly Ser Lys Asn Ala Gly Phe Thr Ser Gly Lys Pro Trp  
225 465 470 475 480  
226 Phe Lys Val Asn Pro Asn Tyr Gln Glu Ile Asn Ala Val Ser Gln Val  
227 485 490 495  
228 Thr Gln Pro Asp Ser Val Phe Asn Tyr Tyr Arg Gln Leu Ile Lys Ile  
229 500 505 510  
230 Arg His Asp Ile Pro Ala Leu Thr Tyr Gly Thr Tyr Thr Asp Leu Asp  
231 515 520 525  
232 Pro Ala Asn Asp Ser Val Tyr Ala Tyr Thr Arg Ser Leu Gly Ala Glu  
233 530 535 540  
234 Lys Tyr Leu Val Val Val Asn Phe Lys Glu Gln Met Met Arg Tyr Lys  
235 545 550 555 560  
236 Leu Pro Asp Asn Leu Ser Ile Glu Lys Val Ile Ile Asp Ser Asn Ser  
237 565 570 575  
238 Lys Asn Val Val Lys Lys Asn Asp Ser Leu Leu Glu Leu Lys Pro Trp  
239 580 585 590  
240 Gln Ser Gly Val Tyr Lys Thr Lys Ser Ile Asn Leu Ile Val Thr Pro  
241 595 600 605  
242 Asn Asn Val Asn Ile Leu Lys Leu Leu Lys Pro Ala Phe Tyr Ala Gly  
243 610 615 620  
244 Phe Phe Ser Ala Lys  
245 625  
248 <210> SEQ ID NO: 3  
249 <211> LENGTH: 1305  
250 <212> TYPE: DNA  
251 <213> ORGANISM: Erwinia rhapontici  
254 <220> FEATURE:  
255 <221> NAME/KEY: CDS  
256 <222> LOCATION: (1)..(1305)  
257 <223> OTHER INFORMATION: coding for N-terminal fragment of sucrose isomerase  
259 <220> FEATURE:  
260 <221> NAME/KEY: misc\_feature

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/10/516,075DATE: 04/26/2006  
TIME: 09:48:12Input Set : E:\Final Sequence list-13173-00012-US.txt  
Output Set : N:\CRF4\04262006\J516075.rawPlease Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; N Pos. 28,85,86,87  
Seq#:3; Xaa Pos. 10,29  
Seq#:4; Xaa Pos. 10,29  
Seq#:9; Xaa Pos. 270,491  
Seq#:10; Xaa Pos. 270,491  
Seq#:21; N Pos. 1237,1238,1239,1240,1241,1242,1243,1244,1245,1246,1247,1248  
Seq#:21; N Pos. 1249,1250,1251,1252,1253,1254,1255,1256,1257,1258,1259,1260  
Seq#:21; N Pos. 1261,1262,1263,1264,1265,1266,1267,1268,1269,1270,1271,1272  
Seq#:21; N Pos. 1273,1274,1275,1276,1277,1278,1279,1280,1281,1282,1283,1284  
Seq#:21; N Pos. 1285,1286,1287,1288,1289,1290,1291,1292,1293,1294,1295,1296  
Seq#:21; N Pos. 1297,1298,1299,1300,1301,1302,1303,1304,1305,1306,1307,1308  
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Seq#:21; N Pos. 1321,1322,1323,1324,1325,1326,1327,1328,1329,1330,1331  
Seq#:21; Xaa Pos. 413,414,415,416,417,418,419,420,421,422,423,424,425,426  
Seq#:21; Xaa Pos. 427,428,429,430,431,432,433,434,435,436,437,438,439,440  
Seq#:21; Xaa Pos. 441,442,443,444  
Seq#:22; Xaa Pos. 413,414,415,416,417,418,419,420,421,422,423,424,425,426  
Seq#:22; Xaa Pos. 427,428,429,430,431,432,433,434,435,436,437,438,439,440  
Seq#:22; Xaa Pos. 441,442,443,444



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## VERIFICATION SUMMARY

PATENT APPLICATION: US/10/516,075

DATE: 04/26/2006

TIME: 09:48:12

Input Set : E:\Final Sequence List-13173-00012-US.txt

Output Set : N:\CRF4\04262006\J516075.raw

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L:271 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 3 after pos.:48  
L:273 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 3 after pos.:48  
L:274 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 3 after pos.:96  
L:374 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 4 after pos.:0  
L:376 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 4 after pos.:16  
L:914 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 9 after pos.:816  
L:956 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 9 after pos.:1488  
L:1030 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 10 after pos.:256  
L:1058 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 10 after pos.:480  
L:2120 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 21 after pos.:1200  
L:2121 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 21 after pos.:1248  
L:2123 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 21 after pos.:1248  
L:2124 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 21 after pos.:1296  
L:2126 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 21 after pos.:1296  
L:2127 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 21 after pos.:1344  
L:2229 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 22 after pos.:400  
L:2231 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 22 after pos.:416  
L:2233 M:341 W: (46) "n" or "Xaa" used, for SEQ ID# 22 after pos.:432